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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,355	03/24/2004	Junichi Karasawa	119253	5380
25944	7590	07/27/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			NGUYEN, HIEN N	
			ART UNIT	PAPER NUMBER
			2824	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H/A

## Office Action Summary

Application No.

10/807,355

Applicant(s)

KARASAWA ET AL.

Examiner

Hien N. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-13 is/are allowed.
- 6) ☐ Claim(s) 1 and 6 is/are rejected.
- 7) ☐ Claim(s) 2-5 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/24/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Search Report.

### **DETAILED ACTION**

1. The Response to the Restriction Requirement filed on 5/10/05 has been entered.

After reviewing the applicant argument on the Restriction Requirement, The Examiner agrees with the applicant that the search and examination of the entire application (claims 1-14) could be made without serious burden. Therefore, the Restriction Requirement dated 4/19/05 has been withdrawn. Any inconvenience caused by this matter has been regrettable.

Claims 1-14 are pending in the application.

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsushita (U.S. Patent No 6,901,002).

**With respect to claim 1**, Matsushita discloses a method of reading data in a ferroelectric memory device (element 1 in figure 1 is a ferroelectric memory cell) comprising the step of:

- applying a read voltage to a ferroelectric capacitor (this step is performed by the read voltage application circuit 41 in figure 1. To be more specific, in the reading mode, the read voltage application circuit 4 would apply a read voltage  $V_R$  to the word line that connects to the ferroelectric memory cell 1 that includes a ferroelectric capacitor 2. See column 7, lines 15-20, also see claim 1);

- detecting a read voltage that reflects an amount of a dynamic change in capacitance of the ferroelectric capacitor to which the read voltage is applied (performed the sense amplifier 38 that is capable of detecting the difference between the electric capacitance  $C_{f0}$  and  $C_{f1}$  of the electric film. See column 7, lines 26-36. It is further noted that the electric capacitance in a ferroelectric memory cell would change with the change of the voltage applies to such ferroelectric film, then the electric capacitance of cell 1 would change when the read voltage  $V_R$  is applied to the ferroelectric cell 1, and the sense amplifier 38 would detects such capacitance change, also see claim 1).

**With respect to claim 6**, figure 1 of Matsushita discloses a ferroelectric memory comprising a voltage applying section (41) which applies a read voltage ( $V_R$ ) to a ferroelectric capacitor (the read voltage  $V_R$  that applies to word line WL is then

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transferred to the capacitor 2), a voltage detection section (the sense amplifier 38 is a voltage sense amplifier as disclosed in column 7, lines 29-30) which detects a voltage that reflects an amount of a dynamic change in capacitance of the ferroelectric capacitor to which the read voltage is applied (see the explanation in the rejection applied to claim 1 above for this feature).

***Allowable Subject Matter***

Claims 8-13 are allowed.

Claims 2-5 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fail to teach a ferroelectric memory device having a ferroelectric capacitor with first and second data, wherein the second data being stored based on spontaneous polarization of a second polarity when the voltage applied to the ferroelectric capacitor returned from a write voltage of the second polarity to 0V (claim 2); a ferroelectric capacitor with a timing of detecting the voltage that reflects the amount of the dynamic change is set in a period specified by the portion in which the voltage rise gradient differs (claims 4, 7, and 8) .

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Sekiguchi et al. (6,545,933) discloses a memory device having a ferroelectric capacitor for improving a read margin.

-Kato et al. (6,614,933) discloses a memory device including a ferroelectric capacitor for improving a read margin.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien N. Nguyen whose telephone number is (571) 272-1879. The examiner can normally be reached on Monday through Thursday 9:30 AM to 7:00 PM..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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H. Nguyen  
July 20, 2005

Hien Nguyen  
Patent Examiner